

IN THE CLAIMS

This listing of the claims replaces all prior listings.

LISTING OF CLAIMS:

1. (Currently Amended) A hybrid circuit substrate with optical and electrical interconnects comprising:

a base substrate section having an interconnect layer formed on an insulating substrate by a printed circuit process;

a micro interconnect circuit section having a micro electrical interconnect layer which is finer than the interconnect layer of the base substrate section, said micro interconnect circuit section being formed on an insulating resin layer by a semiconductor process; and

an optical interconnect circuit section adapted to transfer and/or receive an optical signal and provided with an optical wave-guide having an input section and an output section of a optical signal at opposite ends thereof, and said optical interconnect circuit section having an optical element composed of a light emitting device with a light emitting section thereof facing the optical signal input section and a photo detecting device with a photo detecting section thereof facing the optical signal output section;

wherein,

said optical interconnect circuit section is mounted directly on said micro interconnect circuit section and ~~said optical interconnect circuit section~~ both circuit sections are layered on said base substrate section so as to transmit an optical ~~electrical~~ signal and an electrical ~~optical~~ signal, respectively.

2. (Original) The hybrid circuit substrate according to claim 1, wherein said base substrate section comprises said insulating substrate having as a constituent thereof one of a ceramic material, a hybrid material of a ceramic material and an organic material, and an organic material.

3. (Original) The hybrid circuit substrate according to claim 1, wherein said optical wave-guide is formed by one of a photoconductive resin material, a fluorine-containing photoconductive resin material and a polymer material made of a compound of said photoconductive resin material and said fluorine-containing photoconductive resin material.

4. (Original) The hybrid circuit substrate according to claim 1,
wherein:
said micro interconnect circuit section is mounted on a surface of said base substrate section by having a first surface as a mounting surface; and
power is supplied to said optical element from said base substrate section via said micro interconnect circuit section, when said optical interconnect circuit section is mounted on a second surface of said micro interconnect circuit section by having a first surface as a mounting surface.

5. (Original) The hybrid circuit substrate according to claim 4 further comprising a connecting terminal connected via said micro interconnect circuit section and a via hole to a surface of said optical interconnect circuit section, for mounting and electrically interconnecting electronic components on a second surface of said optical interconnect circuit section.

6. (Original) The hybrid circuit substrate according to claim 1, wherein:
said optical interconnect circuit section is mounted on a surface of said base substrate section by having said first surface as a mounting surface; and
said micro interconnect circuit section is mounted on a second surface of said optical interconnect circuit section by having said first surface as a mounting surface.

7. (Original) The hybrid circuit substrate according to claim 6, wherein electronic components are mounted and electrically interconnected on a second surface of said micro interconnect circuit section.

8. (Original) The hybrid circuit substrate according to claim 1, wherein:
said optical interconnect circuit section is mounted on a first surface of said micro interconnect circuit section by being coated by an insulation layer; and
said optical interconnect circuit section is packed upon having said micro interconnect circuit section mounted on a surface of said base substrate and having said insulation layer as a mounting surface.

9. – 17 (Cancelled)

18. (Currently Amended) A hybrid circuit module with optical and electrical interconnects comprising:

a base substrate section having an interconnect layer formed on an insulating substrate by a printed circuit process;

a micro interconnect circuit section having a micro electrical interconnect layer which is finer than the interconnect layer of the base substrate section, said micro interconnect circuit section being formed on an insulating resin layer by a semiconductor process; and

an optical interconnect circuit section adapted to transfer and/or receive an optical signal and provided with an optical wave-guide having an input section and an output section of a optical signal at opposite ends thereof; and said optical interconnect circuit section having an optical element composed of a light emitting device with a light emitting section thereof facing the optical signal input section and a photo detecting device with a photo detecting section thereof facing the optical signal output section; and

electronic components mounted on a surface of one of said base substrate section, said micro interconnect circuit section and said optical interconnect circuit section, and electrically connected to one of said interconnect layer, said micro electric interconnect layer and said optical element[[:]],

wherein

said optical interconnect circuit section is mounted directly on said micro interconnect circuit section and ~~said optical interconnect circuit section~~ both circuit sections are layered on

said base substrate section so as to transmit an optical ~~electrical~~ signal and an electrical ~~optical~~ signal, respectively.

19. (Original) The hybrid circuit module according to claim 18, wherein:
said optical interconnect circuit section and at least a pair of semiconductor chips as said electronic components electrically connected to said micro electric interconnect layer are mounted on said micro interconnect circuit section; and
transfer of an information signal between said semiconductor chips are performed by optical transfer via said optical element and said optical wave-guide of said optical interconnect circuit section.

20. (Original) The hybrid circuit module according to claim 18, wherein said optical interconnect circuit section is interposed between said micro interconnect circuit section and said base substrate section.

21. – 25 (Cancelled)